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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/887,827	06/22/2001	Joseph A. Abys	Abys 52-14-6-6	7859
47394	7590	09/22/2005	EXAMINER	
HITT GAINES, PC LUCENT TECHNOLOGIES INC. PO BOX 832570 RICHARDSON, TX 75083			LEWIS, MONICA	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/887,827

Applicant(s)

ABYS ET AL.

Examiner

Monica Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
4a) Of the above claim(s) 7-10 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-6 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 18 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the petition filed June 18, 2003.

Response to Arguments

2. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by *Superplasticity in Electroplated Composites of Lead and Tin* by Martin et al.

In regards to claim 1, Martin et al. ("Martin") discloses the following:

a) a metal substrate (For Example: See Page 352 under the Experimental Section); and

b) overlying the substrate a surface finish comprising a layer of tin or tin alloy in a tensile stress state (For Example: See Pages 352-356).

In regards to claim 3, Martin discloses the following:

a) the average tensile stress is in excess of about 2 Mpa (For Example: See Figure 5).

Additionally, the applicant has not established the critical nature of the dimension of stress which is in excess of about 2 MPa. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular

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range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.” *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).

In regards to claim 5, Martin discloses the following:

a) the tin or tin alloy has a thickness in the range .5 to 10 micrometers (For Example: See Page 352).

Additionally, the applicant has not established the critical nature of the tin or tin alloy has a thickness in the range .5 to 10 micrometers. “The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.” *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as obvious over *Superplasticity in Electroplated Composites of Lead and Tin* by Martin et al. in view of Tsujita et al. (Japanese Patent No. 51-143533).

In regards to claim 2, Martin fails to disclose the following:

a) a layer of tin or tin alloy has an average grain size in excess of about 1 micrometer.

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However, Tsujita et al. ("Tsujita") discloses a semiconductor device that has a layer of tin or tin alloy has an average grain size in excess of about 1 micrometer (For Example: See Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Martin to include a grain size in excess of about 1 micrometer as disclosed in Tsujita because it aids in reducing the formation of whiskers (For Example: See Abstract).

Additionally, since Martin and Tsujita are both from the same field of endeavor, the purpose disclosed by Tsujita would have been recognized in the pertinent art of Martin.

Finally, the applicant has not established the critical nature of the dimension of grain size in excess of about 1 micrometer. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).

7. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as obvious over *Superplasticity in Electroplated Composites of Lead and Tin* by Martin et al. in view of Herber et al. (U.S. Publication No. 2002/0187364).

In regards to claim 4, Martin discloses the following:

a) tensile stress in the layer of tin or tin alloy (For Example: See Pages 352-356).

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In regards to claim 4, Martin fails to disclose the following:

a) an underlayer of nickel, nickel alloy, cobalt, cobalt alloy, iron or iron alloy.

However, Herber et al. ("Herber") discloses a semiconductor device that has a nickel underlayer (For Example: See Paragraph 4). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Martin to include a nickel underlayer as disclosed in Herber because it aids in reducing the formation of whiskers (For Example: See Paragraph 4).

Additionally, since Martin and Herber are both from the same field of endeavor, the purpose disclosed by Herber would have been recognized in the pertinent art of Martin.

In regards to claim 6, Martin fails to disclose the following:

a) the underlayer has a thickness in the range of 0-20 micrometers.

However, Herber discloses a semiconductor device that has a nickel underlayer, which has a thickness in the range of 0-20 micrometers (For Example: See Paragraph 4). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Martin to include a nickel underlayer, which has a thickness in the range of 0-20 micrometers as disclosed in Herber because it aids in reducing the formation of whiskers (For Example: See Paragraph 4).

Additionally, since Martin and Herber are both from the same field of endeavor, the purpose disclosed by Herber would have been recognized in the pertinent art of Martin.

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Finally, the applicant has not established the critical nature of the dimension of underlayer which has a thickness in the range of 0-20 micrometers. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML

August 19, 2005

A handwritten signature in black ink, appearing to be 'ML' or similar, located at the bottom right of the page.